

Claims

- [c1] Process for the removal of heavy metals, particularly arsenic, from water, comprising the step of circulating the water to be treated through an electrolytic cell composed of a plurality of electrodes made of iron, or iron alloy, or steel, through which a gas containing oxygen, is insufflated. The water after treatment is clarified and filtered.
- [c2] Process according to claim 1 wherein the water to be treated is continuously recirculated many times through said electrolytic cell.
- [c3] Process according to claims 1 and 2 wherein the water recirculated through said cell passes through a temporary storage tank in order to increase the time of permanence in said electrolytic cell.
- [c4] Process according to one or more of the preceding claims wherein said gas containing oxygen is air.
- [c5] Apparatus for the removal of heavy metals, particularly arsenic, from water, comprising: An electrolytic cell having a plurality of electrodes made of iron, or iron alloy, or steel, said cell having an inlet connector for the water to be treated and an outlet connector for the treated water; means for circulating the water through said electrolytic cell; means for insufflating a gas containing oxygen into said electrolytic cell.
- [c6] Apparatus according to one or more of the preceding claims wherein it includes means for the settling and filtration of the water flowing out from said cell.
- [c7] Apparatus according to one or more of the preceding claims wherein said electrolytic cell is composed by a cylindrical housing, vertically positioned, lined inside with a layer of insulating material. Internally to said housing a plurality of circular plates made of iron, or steel, or iron alloy are stacked along the axis of said housing. Said plates are spaced by means of electrically insulating spacers. The first and last plates, on top and bottom of the stack, are electrically connected to two terminals that are connected to an electrical power supply which delivers a constant d.c. current to the electrode stack. Said means for insufflating the said gas are fitted on the bottom of said housing and placed

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under the first bottom electrode plate. The said water inlet and outlet are placed respectively under and on top of the electrode plate stack.

- [c8] Apparatus according to one or more of the preceding claims wherein each one of said plates is in contact at its rim with the inner wall of said housing. Each plate are pierced with a plurality of holes.
- [c9] Apparatus according to one or more of the preceding claims wherein said plates are stacked coaxially to a tube that holds the whole stack. At the bottom end of said tube are fitted said means for the insufflation of the gas containing oxygen. The upper end of said tube extends from the top cover of said housing and is fitted with a connection for the supply of said gas.
- [c10] Apparatus according to one or more of the preceding claims wherein the means for the insufflation of said gas include a center collector connected to the bottom end of said central tube and a plurality of radial tubular branches extending from the said center collector. Said branches have holes pierced along their upper part for the delivery of said gas.
- [c11] Apparatus according to one or more of the preceding claims wherein said housing is equipped on its top cover with a gas exhaust pipe, said gases being generated inside said housing.
- [c12] Apparatus according to one or more of the preceding claims wherein it is equipped with means for the water recirculation through said electrolytic cell.
- [c13] Apparatus according to one or more of the preceding claims wherein the water recirculation circuit includes an input pipe in communication with the upper part of said electrodes stack, and an output pipe in communication with the space under said electrodes stack. A pump is installed between the input and output pipes.
- [c14] Apparatus according to one or more of the preceding claims wherein in said recirculation circuit a tank is inserted as a temporary storage of the recirculated water
- [c15] Apparatus according to one or more of the preceding claims wherein the

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electrode stack can be extracted from the housing of said electrolytic cell.

[c16]

Process and apparatus for the removal from water of heavy metals, particularly arsenic, as described and illustrated above.

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